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AGRICULTURE.

The right time to Harvest.

A candid and impartial exposition of the various opinions, on the subject of the comparative quality of the wheat and flour in the northern and southern sections of the United States, has been given to the public by Mr. John C. Brush, now of Washington City; with a view to develop the true cause of their difference. It appears in the form of a letter, which has been published by its author, under the commendation of General T. Bailey, of New York, and at the particular request of the Editor of the Albany Plough Boy, and Doctor Samuel L. Mitchell: to the last of whom it is addressed. Mr. Brush has caused many copies to be printed for sale at Washington City, and we sincerely hope that they may obtain a wide circulation: because we think that his advice deserves to be not only read but studied, and strictly followed by every farmer. For, although he has sustained his opinion chiefly by reference to his own observation and experience, still the facts which he states are in some instances satisfactorily supported by an appeal to other persons, and in all cases they are so very reasonable, or may be so well supported by strict analogies derived from high authority, that they approve themselves to our judgment without a struggle. After having completely exposed the insufficiency of the causes usually assigned, to account for the acknowledged degeneracy in the character of New York flour, he submits, what he has long conceived to be the only true and satisfactory cause of the inferiority of flour manufactured to the northward of Pennsylvania.

He believes that cause to be,

"The damaged state of the wheat in consequence of suffering it to remain too long on the earth before harvesting it, after it has arrived to a state of full and perfect maturity. Until, according to the common, strange idea of the North, it is "dead ripe. That is, ripe even unto death."

"In support of this opinion the following facts are offered. That, from the best accounts of travellers and writers, and from the various uses which we have seen made of the straw, it appears that in no part of this or any other country, excepting that North of Pennsylvania, is wheat left to stand on the ground until it reaches its utmost state of decay; and that no where else has the baseness of flour been made a subject of serious and general complaint. In the Southern and Western parts of the United States, the farmers watch with great care and anxiety this period of full and perfect ripeness, and improve, to the neglect of all other concerns, the favoured, the accepted time of harvest. At the North the reverse is well known to be the mode of management. Every thing else is better attended to than the harvest of their wheat crop; which they universally leave far beyond the proper time of gathering it."

"It is also known that the wheat of the South manufactured in the mills of the North, makes as good flour as when manufactured in those of the South; but, that the wheat of the North will make no better flour when manufactured in the mills of the South. Nor will the wheat of the North command as high a price in the Southern markets as that of the South."

"Of the first of these facts, there have been many proofs, the advantages and disadvantages in the inspection laws of the respective places to the contrary notwithstanding. One of the most respectable and satisfactory proofs was given me not long since by General Bailey, of New York, in a conversation with him on this subject. He told me that he once re-

ceived from the mills of Messrs. Merit & Hart, between Albany and Troy, flour manufactured by them from a cargo of Southern wheat, of a quality superior to that manufactured at the South, which he had been accustomed to use."

"Further, that wheat at the North harvested about the period of full ripeness, as it is at the South, will make as good flour, the following relation of facts will prove. In the year 1805, I removed from the South, (the state of Delaware) to New York my native state, and recommenced my favourite, agricultural pursuits, on a most fertile and delightful farm belonging to George Tibbetts, Esquire, of Troy; situated on Green Island, formed by the junction of the two lower mouths of the Mohawk with the Hudson."

"The year following, just as I was setting in one morning, with all the force I could rally, to harvest a very large and fine crop of wheat, my brother Gilbert Brush, then a merchant in Troy, but for many years a farmer in that neighbourhood of high reputation in his business, came into the field, and with great concern for me and my interest, addressed me in the following hasty and abrupt, but kind manner: "Why really, brother, are you quite mad? It cannot be possible that you seriously intend to cut this "charming field of wheat in its present green state. "My word for it, you will lose it all, and thereby "bring on your ruin." I smiled, and thrust in the sickle, for I knew that "the harvest had already "fully come." And left him to bemoan my folly; and to go and consult with his neighbours on the signs of the time of harvest. Some said, "yet ten days; "some two weeks; and some three weeks, and then "cometh harvest." I heeded them not; but proceeded, and before some of them had finished their harvest, I had mine threshed out, taken to market and sold; and for a greater price than was obtained that season. The flour of this wheat was confessed to be of a superior quality, and fully equal to that from the South."

"In the spring of 1808, I resigned the lease of this favourite spot to my brother already mentioned, who has occupied it ever since, and returned with my family to the South; nor heard, nor troubled myself more about what my brother and my old honest Dutch neighbours thought of my mode of managing the wheat crop, until last spring. When, after an absence of eleven years, I had the pleasure to see this same brother again in New York. And, after the greetings usual on such tender occasions, and a little common talk on the affairs of old times, the first set subject he introduced was, the wheat crop I cut in a "fit of madness," on Green Island. And he then told me, that from the time he had succeeded me on the premises, he had pursued my plan of cutting and curing his wheat in due time; and that it was acknowledged, that it, and the flour made from it, were far superior to that of "dead ripe wheat."

"Perhaps, there are no stricter observers of the times and seasons of nature, than the farmers of the North, in every crop, except that of wheat. Their rye, their Indian corn, and oats, they gather in before the "dead ripe" state—their timothy, clover, and all kinds of grasses, they cut; and their fruits and vegetables they preserve in due time. Every thing in this way shares their kind and seasonable attention.—Let them, then, bestow the same on their wheat, and, after one year, they will have no further reason to complain of the inferiority of their flour."

"Let them treat their wheat as they do their rye, and their flour will be as much superior to what it now is, as that of early is cut to that of late cut rye. The practice here recommended is precisely that of the South; where they harvest their wheat at the same time the farmers at the North do their rye."

"I may further observe, that for the same cause, namely, that of gathering the crops in, or out of due season, the Indian corn meal of the North is as much superior to that of the South, as the wheat flour of the latter is to that of the former. At the North the earlier approach of winter, and its greater severity render it necessary that the corn crop should be gathered in as soon as it is ripe; it would not be safe to let it remain out, like the wheat, until it is "dead ripe." At the South, not being under the same necessity of gathering in the corn crop when it is fully ripe, it is there suffered to remain on the ground quite too long. Yet, it is with the corn there, as it is with the wheat at the North, it is far better when gathered in due time. This is known by the frequent practice of plucking the earliest ripe ears and curing them in a proper manner. The meal will then be much richer, more palatable and nutritious. And so it will be with all kinds of pulse, as has been determined by several experimentalists."

"To offer reasons to enforce the opinion that this inferiority arises from cutting the wheat too late, would be almost superfluous, after the preceding facts and observations. For what can be more obvious, than that the substance of every thing must be better at full maturity, than when it has far declined?"

"If what I have advanced, and endeavoured to support by facts, observations, and reasonings, be true, namely, that the inferiority of Northern flour be wholly owing to the too late cutting of the wheat, it will, no doubt, be asked, how it has happened that the farmers and millers of the North have not discovered and attended to this fact, as well as those of the South? The truth is, the farmers and millers of the South, in general, know about as little of, the cause of the superiority of their flour, as those of the North do to that of the inferiority of theirs. The former are perfectly contented that their flour be good; while the latter are everlastingly complaining that theirs is bad; and this is all that any of them know on the subject. They are alike governed by long established habits and customs. Some person, it seems, has been wise enough to find it out for them; and kind and patriotic enough to make it known. Yet, it will still be urged, that there must be some reason for a practice so directly at variance in a matter of such high importance. I will, then, give the best account of it I can. And having farmed it, and been concerned in mills from the 38th to the 43d degree of north latitude, it is probable that it will not be altogether an irrational one."

"To be sure, it is said, that wheat is the staple of New York, as well as of Virginia. That it is the principal and most valuable product, is certain. But, it by no means follows from this, that it is as much attended to at the most critical season. In truth, it would be difficult to tell what is the staple of the state of New York, it has so many valuable and important articles. Hence the care and attention of the cultivator are so much divided amongst his various objects, his wealth and prosperity not depending entirely on any one, that some one more must be neglected, through his too great hurry of business.—And, it unfortunately happens, that the wheat crop is one; and, I believe, the only one that is neglected. It being a clear gain crop, and not a living one, he knows, that if it should be wholly lost, it would not much affect, far less ruin him; as he has many other valuable articles for market, on the proceeds of which he can still safely depend for subsistence, for the payment of his debts, and for the prosecution of his views of speculation. Not so with the farmer of the South. Never having been trained as a dealer in notions, his wheat crop is his main, and often his sole dependance. If this be lost, all is pretty much lost."

Consequently this will receive his particular care and attention. It will not only be the last interest he will neglect; but he will neglect every other interest for the sake of this. For it is, in truth, his temporal salvation."

"The improvement spoken of, as to the proper time of *harvesting*, and manner of curing the wheat crop, was purely an accidental discovery made more than seventy years since, by a wealthy and respectable farmer of the county of Queen Ann's, on the Eastern Shore of Maryland. The accidental circumstance which led to this important discovery, it is not of consequence to mention. Otherwise, I could do it, and support the truth of the fact by the most unquestionable authorities."

"But, such are the well known prejudice and obstinacy of mankind, that though the fact, with all its advantages stared them in the face on every side, it was not until about forty years, that it became a general practice at the South. Is it any wonder, then, considering the *snail* progress of all important improvements, that this practice of the South has not found its way, as yet, beyond the Delaware river, or the Northern boundary of Pennsylvania. But, as surely as reason and common sense are to be found at the North, as well as at the South, it will very shortly be adopted by the farmers of the former section."

"Let, then, these several facts be attentively and candidly weighed, and I must think, that with any mind, in a state to be impressed with evidence of so reasonable a nature, nothing more would be required to induce a conviction in favour of the opinion here contended for; namely, that the damage the wheat must necessarily sustain from being left too long on the ground beyond the time of entire ripeness, is the real and true cause of the inferiority of Northern flour."

To the greater proportion of gluten, its condition and that of the mucilage, saccharine principle and starch contained in early cut wheat, we are inclined chiefly to ascribe the alleged superiority of flour that has been made from it. That there is more gluten in wheat when it is cut as soon as it arrives at maturity, than there is when cut at a later period, might be inferred from our knowledge of the difference that exists in the proportion of leaven found in ripe and unripe fruits, but it may be more satisfactorily shewn by the analysis of Virginia, or early cut wheat; and New York, or late cut wheat, as given to us by Mr. Coles: who found in,

Of Gluten, Starch, Bran.

100 parts of Virginia Wheat,	24	70	6
And in do. of New York do.	19	76	5

This excess of gluten in Southern wheat, is attributed by Professor Davy and others, almost exclusively to the influence of climate; but that very profound Chymist, we believe, would have given a different opinion as to its cause, if he had adverted to the early period of its maturity at which Southern wheat is usually harvested. for this may of itself account for all the difference which has been observed in the two kinds of grain.

That seasons and climate may exert their influence over the quality, as they do upon the quantity of our crops, we do not doubt: but still we believe that improper delay, either at seed time or harvest, would ordinarily be followed by more extensive and decided effects. The power of plants and trees to reproduce their proper kind, and mature their seeds and fruit wherever they can prosper, has fallen under the observation of every one. And we all know that the particular plant now under consideration, is peculiarly hardy in its growth. In the language of Mr. Coles, "it flourishes luxuriantly in almost every region or district of our country, it is produced from Georgia to Maine, from the Mississippi to the Atlantic; and in the United States of America, is subject to fewer casualties, accidents or contingencies than in any other country. There is no other country of which we have read or heard that has not been sometimes visited by failure of crops and by famine; but with us there is no such thing as a failure of the wheat crop—the memory of man cannot recollect it—the annals of our country do not record it; other crops fail, but wheat never: the quality varies with the season, but

the crop never fails." The very small difference which has been found by analysis in the ingredients of wheat, when grown at places so remote from each other, properly considered, is well calculated to prevent our laying too much stress upon the influence of seasons or climate. The changes which are accomplished in a few days, when apparently lifeless seed, is brought into verdant being, are far more conspicuous and infinitely wonderful; so too are those which happen at the close of its growth, when in as short a period: the ripening juices, secreted within the epidermis of the future grain, are nearly all converted by the influence of vegetable life, from their mucilaginous form, into the less soluble state of starch and the condition of insoluble gluten. These changes are thus described by Chaptal:

"Mucilage appears to constitute the first alteration of the alimentary juices in vegetables. Most seeds are almost totally resolvable into mucilage, and young plants seem to be entirely formed of it. This substance has the greatest analogy with the mucous fluid of animals. Like that fluid, it is most abundant in the earlier periods of life; and all the other principles appear to be derived from it: and in vegetables, as well as animals, its quantity becomes less in proportion as the increase of magnitude, or growth of the individual, becomes less or ceases. Mucilage is not only the nutritive juice of plants and animals; but, when extracted from either, it becomes the most nourishing and wholesome food we are acquainted with. Mucilage forms the basis of the proper juices, or the sap of plants. It is sometimes found almost entirely alone, as in mallows, the seeds of the wild quince, linseed, &c. In other instances it is united with an oil, and forms the fat oils. Frequently it is united with sugar: as in the gramineous seeds, the sugar-cane, maize, carrot, &c.

"The fecula or starch appears to be only a slight alteration of mucilage, for it differs from that substance in no other respect than in being insoluble in cold water, in which liquid it falls with wonderful quickness. If it be put into hot water, it forms a mucilage, and resumes all its characters. It seems that the fecula is simply a mucilage deprived of caloric. In fact, a young plant is all mucilage."

"The glutinous principle, which on account of its properties resembling those of animal substances, has been called the *vegeto-animal* substance by some chymists, is more particularly obtained from gramineous vegetables. We are indebted to Beccari for the discovery of this substance: and the analysis of farinaceous substances has since been enriched with various important facts. To make the analysis of any farina, the methods employed are such as are simple, and incapable of decomposing or altering any of its constituent parts. A paste is formed with the flour and water; and this is kneaded and wrought in the hands under water, till it no longer communicates any colour to that fluid. The substance which then remains in the hand is tenacious, ductile, and very elastic; and becomes more and more adhesive, in proportion as the water which it had imbibed flies off by evaporation. In this same operation the fecula falls to the bottom of the water; while the extractive matter continues in solution, and may be concentrated by evaporation of the fluid.

"If the glutinous matter be stretched out, and then let go, it returns by spontaneous contraction to its original form. If it be left suspended, it becomes extended by its weight, and forms a very thin transparent membrane, which exhibits a kind of net work, resembling the texture of the membranes of animals. If the gluten be dissolved in the vegetable acids, several times repeatedly, and precipitated by alkalies, it is restored to the state of fecula: and according to Macquer, if vinegar be distilled by a gentle heat from this substance, it is reduced to a state of mucilage. It is to gluten that wheat owes its property of making a good paste with water, and the facility with which it rises."

And in the downward course of plants, the changes which they suffer are no less remarkable.

"The constituents of plants during vegetation, are

continually going through a regular set of changes, losing the properties of one substance, and assuming those of another. Thus a substance which in the young plant has the properties of mucilage, assumes in the old the properties of starch; what in green fruit is an acid, in ripe fruit becomes sugar. Vegetable principles, then, are not fixed or stationary in the living plant: they are gradually running into one another. But this tendency to change, or rather this continual decomposition in consequence of the mutual re-action of the different simple substances of which the vegetable principles are composed, is by no means confined to the living state. It goes on with equal or with greater energy in favourable circumstances in vegetable matter, after it has been completely separated from the living plants. It has been observed, that this tendency to spontaneous decomposition is usually greater in animal than in vegetable bodies, and that those vegetable bodies in which the tendency is greatest, bear the closest resemblance to animal matter. Hence the common chemical phrase, that such substances are *more animalized*. This is the case with gluten in particular, which undergoes spontaneous decomposition more rapidly than most other vegetable bodies."

This tendency to change should teach us to reap, cure, and save our crops as soon as they are ripe; for it advertises us that longer delay and exposure to the weather might, and most probably would, subject them to the first stages of a second growth which by destroying a portion of their gluten, would greatly injure their value. The importance of preserving this ingredient may be well understood from the following observations. "To the property of the pulverulent particles of gluten to become elastic by the addition of water, it is certain that the farina of wheat owes that of forming a paste, and that in proportion to its quantity and maturity the panification varies." And, "The substance best adapted to make loaf bread is wheat flour, and this is composed chiefly of starch and gluten. It is to the gluten, however, that wheat flour owes its superiority to every other as the basis of bread." Again, "it is stated that, if wheat be grown in the ear, the flour that is made from it may to all appearance possess every quality of excellent meal; but it is well known that, it is impossible to make bread from it of a wholesome and digestible nature, because the circumstance of the grain being grown, destroys the susceptibility of the flour to be acted on by leaven."† When we reflect upon the little exposure that suffices to injure and destroy the gluten of grain, the necessity of cutting it as soon as it is ripe, and of saving it as soon as it is cured, appears so obvious that we are compelled to wonder that it could have been so generally overlooked or disregarded. The causes which produce that change are few and simple. Their agency is beautifully seen in the process of malting.

"The term *malting*, is applied to grain which has been made to germinate artificially to a certain extent, after which the process is stopped by the application of heat. Barley is chiefly used for this purpose. It is steeped in cold water for a period, which by the laws of England, must not be less than forty hours; but beyond that period the steeping may be continued as long as it is thought proper. Here it imbibes moisture, and increases in bulk: while at the same time a quantity of carbonic acid is emitted, and a part of the substance of the husk is dissolved by the steep water, which gradually acquires a yellow colour, and the peculiar smell and taste of water in which straw has been steeped. After the grain has remained a sufficient time in the steep, the water is drained off, and the barley thrown out of the cistern upon the malt-floor, where it is formed into a rectangular heap, called the *couch*, about 16 inches deep. In this situation it is allowed to remain about 26 hours. It is then turned, by means of wooden shovels and diminished a little in depth. This turning is repeated twice a day or oftener, and the grain is spread thinner and thinner, till at last its depth does not exceed a few inches. When placed on the couch, it

* Thomson's Chemistry.

† Cole's Memoir on Flour, &c.

begins gradually to absorb oxygen from the atmosphere, and to convert it into carbonic acid; at first very slowly, but afterwards more rapidly. The temperature, at first the same with that of the external air, begins slowly to increase; and in about 96 hours the grain is, at an average, about 10° hotter than the surrounding atmosphere. At this time the grain, which had become dry on the surface, becomes again so moist that it will wet the hand, and exhales at the same time an agreeable odour, not unlike that of apples. The appearance of this moisture is called *sweating*. A small portion of alcohol appears to be volatilized at this period. The great object of the malt-men is to keep the temperature from becoming excessive. This they do by frequent turning. The temperature which they wish to preserve varies from 55° to 62°, according to the different modes of malting pursued. At the period of the sweating the roots of the grains begin to appear, at first like a small white prominence, at the bottom of each seed, which soon divides itself into three rootlets, and increases in length with very great rapidity, unless checked by turning the malt. About a day after the sprouting of the roots, the rudiments of the future stem, called *acrospire* by the malsters, may be seen to lengthen. It rises from the same extremity of the seed with the root, and advancing within the husk, at last issues from the opposite end; but the process of malting is stopped before it has made such progress. As the *acrospire* shoots along the grain, the appearance of the kernel, or mealy part of the corn, undergoes a considerable change. The glutinous and mucilaginous matter is taken up and removed, the colour becomes white, and the texture so loose that it crumbles to powder between the fingers. The object of malting, is to produce this change! when it is accomplished, which takes place when the *acrospire* has come nearly to the end of the seed, the process is stopped by drying the malt upon the kiln. The roots appear, from the process, to be formed chiefly from the mucilaginous, and glutinous parts of the kernel. The starch is not employed in their formation but undergoes a change intended no doubt to fit it for the future nourishment of the plant."

Thus in one week, by the agency of heat, air and moisture, the gluten of barley may be wholly destroyed and the nature of the starch be entirely altered. And as wheat contains more gluten than barley it is probable that, it would pass more rapidly through those changes. To the smaller quantity of this active principle found in rye, barley, maize, and oats, we attribute their inferiority, compared with wheat. Ten parts of those give us about one part of gluten, whereas five parts of wheat give us one part of gluten. Hence we may infer that a very partial reduction of the gluten of wheat, would render that grain incapable of being converted into good flour. And if it is objected that we have appealed to an operation of art to support our inference, and illustrate the changes which grain undergoes when exposed to heat and humidity, why then we may observe, "that all vegetable substances, both complete plants, and the competent parts separately, when left entirely to themselves are gradually decomposed and destroyed, provided moisture be present and the temperature be not much under 45°." This decomposition is unhappily, too often experienced in our harvest field, where we have repeatedly seen the process of vegetation recommencing in the heads of grain cut too late and exposed after being cut, to rains of some days continuance, succeeded by humid weather. The advantages of harvesting in due season are it would seem, by the following extract, well understood in some parts of England.

Cutting of Wheat before it is ripe.

"It is said by a Paris paper, that grain cut eight days before the ordinary time, has, first, the advantage of escaping the dangers which threatened it at that period. This is accidental, but it has the positive advantage of being more nutritive, larger, finer, and is never attacked by the weevil. These assertions are proved by the most conclusive experiments,

made upon a piece of grain, half of which was cut prematurely, the other half at the customary time.—The first part gave three bushels more grain to an acre. Afterwards an equal quantity of the farina was made into bread; that of the grain cut when green, made from one bushel, five pounds more bread than the other. Finally, the weevil attacked the corn cut when ripe, and the other was free from it. *The moment to reap, is, when the grain, squeezed between the fingers, appears pasty, like the crumb of bread immediately after it is taken from the oven.* This, which is the opinion of Mr. Cadet de Vaux, is supported by that of Mr. Mellard, a very respectable agriculturist. They both confirm their theory by experiments. The same custom has been practised for many years at the magnificent farm of Mr. Coke at Holkham, in England, who cuts not only his grain before its maturity, but likewise grasses, and even herbaceous plants. He does not hesitate to attribute to this measure the superior quality of his grain and hay to that of other farmers, who reap all things at the period of their perfect maturity."

And now, that we have presented all the views that we intended to give in support of Mr. Brush's opinion of the expediency and importance of early harvests, we will lay his instructions before our readers, as to the appearance of the straw and grain at the proper time of reaping, and likewise his observations as to the saving or advantages that attend an early harvest, independently of the better quality of the grain.

He says, "those sure and infallible indications of nature, by which she points out that precise stage of full and perfect maturity in the wheat crop, when, according to her fixed and universal laws, it ought to be harvested, and taken from its parent earth, in order to preserve it from that waste of its richer, finer, more sprightly, and generous substances, which it must inevitably lose in consequence of standing through a long and tedious decay, after the state of full and perfect ripeness.

"These indications are few, simple, and easily understood. When the straw exhibits a bright golden colour from the bottom nearly to the top, or head: when the head begins to incline gently, and in a small degree, be assured the time of nature has come; life is then departing; put in the sickle, and save the crop from that waste which it must certainly suffer from delay. But, as all parts of a crops will not be equally ripe at the same time; go through your wheat field, when you contemplate harvesting it, and select the very greenest heads you can find, and, if by rubbing them in your hands, you can separate the kernel from the chaff, you may know that the grain is then out of its milky state, and may be cut with safety; for although the straw of such heads may be quite green from the head some distance downwards, still if the part below, as before mentioned, is of a bright golden colour from the bottom upwards, the grain will not shrink or perish, if properly cured in the air and sun. These indications show that the grain wants no further nourishment from the earth; that the earth of course, can give no more."

The many advantages obviously arising from the practice here recommended of harvesting wheat in due season, independently of the superior quality of the flour, are, first, that less of the wheat is lost in gathering it; cut at the proper season there is none worth naming lost by shelling out; scarcely a grain being seen through the whole process of harvesting cut at the "dead ripe" state, one tenth, at least, is lost. For really in this state, every stroke, every touch is more like threshing with the flail, then cutting with the cradle, sickle, or scythe; and strews the ground with a sufficient quantity of loose, scattered grain to seed it twice over, which is a great loss.

"In the second place, by cutting the wheat crop in due season, the straw is not only good provender; much better than the straw of the rye, which is so eagerly sought after in all the cities and villages at the North, in what they call *chopped stuff*; but for various other uses, such as hats for men, bonnets for women, for bottoming chairs, for mats for our entry doors, horse collars, thatching, and for elegant toy

boxes and baskets. While the straw of "dead ripe" wheat is fit for nothing but to be trodden under foot by beasts, as no old starving cow would eat it."

"Another great advantage of harvesting the wheat crop in due time, is, that it produces less interference in the various business of the season. Particularly as it gives the farmer an opportunity, before it be too late, to bestow upon his crop of Indian corn the last dressing, which is by far the most critical; and which, if not done in due time, had much better not be done at all.

"And it is well known, that generally the highest price can be obtained for wheat immediately after harvest. He then who delivers his wheat first in the market, will be in the way to receive the gain."

"Lastly. All grain, fruits, and vegetables, used in distillation, will, for the reasons already given, yield a choicer and more pure spirit when gathered at the season of full and perfect maturity. The more *gluten* or active substance, the more alcohol; a great consideration to the makers of whiskey."

And in conclusion, Mr. Brush proposes, if sufficiently patronised by the public, to prepare small tracts on the following subjects.

"1. The best mode of tillage for flat or champaign lands, particularly the Hempstead plains on Long Island; and embanked meadows of the Messrs. Swarts on the marshes of the Hackensack and Passaic rivers; with the most proper culture of corn on such lands. 2. The most proper course to be pursued with all labouring men and animals as to the times of taking their food and rest. 3. The cheapest food on which to raise and fatten swine. 4. The only principles on which to construct chimneys and fire places, so as to render houses free from smoke, secure against accidents by fire, and to produce the greatest degree of warmth with the smallest quantity of fuel."

FROM THE NATIONAL RECORDER.

Mode of Making Butter,

As it is practised in the neighbourhood of Rennes in Brittany, where the best Butter in France is made.

Milk is composed of three parts, essentially different from each other; they are as follow:

1st. The aqueous part, called whey, which is very acid.

2d. The cheese part, which is substantial.

3d. The butter part called cream, of an oily nature, and which comes up naturally to the surface of the milk even before its decomposition.

It is this cream that is turned out into butter by churning.

In order to make good butter, the decomposition of milk must have begun; I mean the parts must be exactly separated, as it happens when it begins to turn sour. Milk must necessarily be sour before beginning to churn; but it is urgent to churn it as soon as it is sour, and not to wait its fermentation.

It must have curdled and soured of itself without fire. In the winter season, however, it is proper to pour a little sour milk into it to make it coagulate.

Though the cream is the elementary part of butter, and neither the whey nor the cheese part contain any of it, yet it is necessary to throw into the churn the three parts of the milk, and to churn them all together. The reason of it is evident. The churning, which must be always uniform and continual, communicates a slight degree of heat, which would give a disagreeable taste to the butter, if the cream were churned alone; while churning the whole together, the acidity of the whey tempers the heating effects of the churning, the cheese parts help the separation, and the butter comes fresh out of the churn. It is to preserve that fresh taste, that in summer our butter women, as soon as they perceive the small globules of butter beginning to form, do not fail to throw into the churn (by the hole of the churn-staff and without stopping the churning) some pints of spring water every ten minutes, that is, a pint to every fifty or sixty pints of milk: in winter, on the contrary, they add warm water, but they pour it in as soon as they begin to churn, in order to accelerate the slight degree of heat necessary for the formation

of butter; but when they perceive the first butter globules forming round the churn-staff, then they cease pouring warm water, and the temperature warns them as to putting any cool water. Thus, to make butter, it is required—

1st. That milk must have curdled and soured, but not fermented.

2d. That milk must have naturally soured, without any help but a little quantity of sour milk, and especially without warming it.

3d. That all the milk should be put into the churn together, and churned without extracting any parts of it.

4th. That the churning should be continual and always uniform, avoiding to strike the bottom of the churn.

5th. That churning, without interruption, communicates to the milk a slight degree of heat, which is necessary; and which in winter may be accelerated by adding some warm water from the moment one begins to churn, and without stopping the churning motion.

6th. As soon as one perceives the little globules of butter forming, one must then think only to cool, with spring water, if in summer, for in winter it is not necessary.

7th. If you wish to churn some sweet milk, it may be put into the churn with the curdled milk twelve or fifteen hours, more or less, according to the relative quantity, before beginning to churn, in order that the part of sweet milk you have added be entirely curdled.

8th. This mode is no doubt much longer than when the cream alone is churned; for one must churn during about two hours in the most favourable season, and it is common in winter to take four hours churning to have your butter made.

Preparation of Butter.

When butter is made, if the weather is hot, it is well after having gathered it in the churn, to let it cool about two hours; but when it is very hot weather, as that time is not sufficient to cool it, it is well to put it in a very cool place during some hours, till it is very firm, in order to extract the butter-milk out of it.

It is by kneading and turning repeatedly with a wooden box spoon, in a beech dish made of one piece, that the women about Rennes extract the buttermilk; leaving it now and then to rest and grow hard, and then beginning again till it does not yield any buttermilk: it is only in the last extremity and in the hot days of summer that they knead it in cool water in order to extract the buttermilk out of it: they put nothing in it, but some salt for preserving and relishing it.

They never touch the butter but with a wooden box spoon, which must be impregnated, and also the dish, with some light brine, to prevent the butter from adhering.

All the utensils employed for milk must be carefully washed with boiling water every time they have been made use of, then washed again with cold water, and exposed to the sun, that they not get a musty smell. It is necessary to remove from the dairy all the disagreeable or strong smells, and to observe the most scrupulous cleanliness in it, but without humidity, which would give a mouldy taste to milk.

The churn is made of chesnut wood; it is scalded every time it is emptied to churn again; it is rubbed with a bunch of holly-oak, that scratches and cleanses it well, and then washed again with cold water.

The pots and churn must keep no smell of the sour milk, and none of the utensils employed should be or have been put to any other uses, for fear of spoiling the whole.

Buttermilk.

I desire that the proprietor for whom this instruction is destined, may taste the milk remaining in the churn after the butter shall have been taken out of it, the first time he shall try our method. It is indeed a very agreeable and cooling drink, which physicians believe very wholesome and nourishing. It is an es-

sential part of the nourishment of our country people, who make at least a meal of it every day. They take it without warming and put usually into it some broad thin buckwheat cakes, or, according to the season, peas, beans, chesnuts or potatoes boiled in water. The great strength and vigorous health of these country people is attributed to the use of this nourishing beverage.

In order to keep this butter-milk many days, one must extract its whey which is sour; the means are as follows:

In the lower extremity of the churn level to the bottom, an opening must be made, that is shut by a peg of about three or eight lines in diameter; after the butter is taken out of the churn, leave it to settle some time to let the whey separate from the curd; then take out the peg and all the whey will run out into a basin, taking care to put the peg in as soon as the curd comes out. This whey is given to the hogs. If all the whey is not out, of the churn, and the curd has a sour taste, throw some pints of cold water in the churn, take out the peg, and the water will run out, carrying with it the remaining whey. This milk may remain in the churn many days without any inconvenience; it may be given to hogs, to horses, and even calves, mixed with a little sweet milk.

The butter made according to the above mentioned process is of an excellent quality, and superior to the best *Wonderley's butter*, in the spring, found in the Philadelphia market. I have been told, when in England, that in some counties, as well as in the south of Ireland, the mode of churning the cream and milk of one milking all together was in general use.

FRANCIS DA COSYA.

Reuben Haines.

FOR THE AMERICAN FARMER.

THE DAIRY.

Short account of the manner of feeding and dressing the cattle, &c. at the Dairy near Glasgow, belonging to William Harley, Esq. of Willow Bank.

Manner of Feeding in Winter.

Feeding commences at six o'clock in the morning, and consists of distillery grain or draff, cut hay and straw, with turnips or potatoes mixed together and steamed about one third of the mash is made of the three last articles; each cow gets about eight Scotch pints* of the above at a time in a pail, mixed with about one ounce of salt. Besides the above quantity there is about one third part more carried into the Byne, and set down in large carrying stands or barrels, out of which the Byne man who has charge of forty cows, supplies those cattle which he thinks require, or will eat more than they get in their first allowance. After the cattle have eaten a sufficient meal of the above, and before the pails are withdrawn from before them, the Byne man gives each cow from four to six pints of pot ale, or distillery wash; after the pails are withdrawn, each cow gets a small quantity of hay or oat straw, which finishes the morning feed. Feeding commences again at eleven o'clock, when the same routine is again gone through. It commences again at four o'clock in the afternoon in the same manner, with the exception of the pot ale. At seven o'clock in the evening each cow gets about from eight to twelve Scotch pints of pot ale, or more if they can drink it; and immediately after the pails in which the ale was given, are withdrawn, each cow receives a small

* Two Scotch pints equal to one English gallon.

quantity of hay which finishes the day's feeding.

Summer Feeding.

In summer they are fed at precisely the same hours as in winter, and the mash is also the same with the exception of turnips or potatoes, when distillery drain or draff can be got, but when this article cannot be got, coarse flour, bran or any kind of mashed grain is used in its place. In this case the quantity given to each cow is less than in winter, say seven Scotch pints to each cow without any further addition at each meal. The drink at this season, is pure water, and instead of entire hay, a proportion, say two thirds of clover or green barley is mixed along with it, and given to them in abundance. The above refers to the three first feeds at six, eleven, and four o'clock, but at seven o'clock they get a drink of water, which is succeeded with a little dry hay or straw, which closes the day's feeding.

N. B. The meat and drink, and even the pure water is given to them at a temperature of about eighty degrees of heat, Farenheit's Thermometer.

Milking.

The milking of the cattle commences at five o'clock in the morning,—each woman milks from twelve to fourteen cows, which takes about two hours. Behind each Maid is placed on the pavement, a tin case, which holds about twelve Scotch pints, and graduated on the inside by a scale of quarter pints; into this can she pours the milk from the wooden pail into which she draws the milk from the cows; and when full is immediately taken away to the Dairy, by a person appointed for that purpose, and emptied into a large vessel through a brass wire seive, out of which it is again measured by another person, and put into the cans to be carried through the city. A pair of these cans will hold about eighteen Scotch pints—the cans are locked by means of small padlocks, and the milk is drawn off at the bottom by a small brass cock. A quantity of milk is likewise sent out through the town and suburbs, in large cans or wooden barrels locked up in the same manner, and each will hold about thirty Scotch pints. Three of these are placed upon a small two wheeled carriage hung upon springs, and drawn by little ponies or asses. The milking, measuring and sending it off, are all accomplished in about two and a half hours.

Cleaning, &c.

At eleven o'clock, each milk maid commences to curry with a comb and brush the cattle which she milks, which occupies about two and a half hours. Milking again commences at three in the afternoon, when the same routine of milking and measuring is gone through, which occupies about two hours—there is no currying after this last milking.

The Byne is properly cleaned in the morning, before the cattle are fed, and during the time they are eating their hay or straw after their soft meat, the Byne men go through with a small fork, and make up their beds which consists of straw. After this is done, the Byne man likewise sweeps all the passes, and strews them with beat sand. All this is accomplished by about half past eight o'clock in the morning.

The thermometer is then examined—the temperature of the Byne being always kept at about sixty-five to sixty-eight degrees of heat, by means of ventilators through opening windows in the roof—when the degree of heat, is ascertained, the Bynes are shut in, and no person is allowed to enter before eleven o'clock, that the cattle may have time to rest after each feeding, the same routine of cleaning and giving the cattle rest is gone through.

The Farmer who, with a dozen cows, complains that his wife does not provide his table with good butter, is requested to show her the above article. Let him contrast it with the management of cows in this and the southern states; where, as we once heard it remarked, if, after milking six cows, the bottom of the pail should be *wet*, the milk-maid thinks it sufficient encouragement to go on and milk the rest!!

Editor.

Cultivation of Cotton.

TO THE EDITOR OF THE AMERICAN FARMER.

SIR—Having seen but one or two pieces in your useful paper upon the Culture of Cotton, I have thought fit to send you a few remarks on that subject—living, however, nearly upon the outer edge of that portion of our country in which the plant can be matured, my experience and opinion may not accord with the knowledge of those who live in a climate more congenial to its growth.

It has been but a very short time since it was discovered, that cotton could be cultivated to any advantage, in this section of North Carolina; or, indeed, in any part of the state.

The Cotton now grown in this state competes in the foreign markets with any upland cotton exported from North America, Louisiana excepted. North Carolina has never been credited with more than one tenth of her actual surplus produce sent abroad. Owing to the badness of her navigation, her cotton, tobacco and flour, have gone to Virginia and South Carolina, and have helped in no inconsiderable manner to swell the amount of their exports. Although she possesses a soil and climate fitted for the growth of almost every plant that flourishes north of the tropicks, yet she is only estimated in the great scale of the Union, as affording tar, turpentine and lumber. Her extent of territory, wealth and population should entitle her to an eminent stand among the states. That she does not enjoy it is in a great measure owing to the economizing policy of her rulers. You see but little in the acts of her legislature that goes to benefit the state.

Much, sir, has been said upon paper about the improvement of our Rivers, which has only served as a will-o-the-wisp meteor to destroy and lead a few to ruin, by giving to the property contiguous to those rivers, a momentary, but enormous rise in value.

The evils that I complain of are remediable; the people can apply the corrective, by choosing men of enlightened and enlarged views for their legislators.

In 1818 there was an Agricultural Society formed for the state, but like the improvement of our Rivers, it is only to be found in the news-

papers: But I have done, sir, with complaining for this time, and now to the culture of cotton.

The ground should be broke up deep in February and March, and thrown into ridges—the distance of those ridges, from centre to centre, must be determined by the strength of the soil; the poorer the soil, the nearer the ridges; if the soil is stiff and breaks up in clods, there should be a harrow or roller passed along those ridges, so as to pulverize them. The time of planting in this part of the state is, commencing about the first of April, and continuing until the first of May, in a large crop. The ridges are opened with a small plough called a scooter, something like the shovel plough. The seed before planting must be rolled in dirt, or, still better in ashes, to disengage them from the wool of which they are not entirely freed. One hand will rub and prepare the seed as fast as ten can plant them. They are then to be sowed in the opening in the ridges, and at least three bushels to the acre. They should be covered very lightly, say one and a half inches. It very frequently happens that it rains before the seeds vegetate, the sun then hardens and bakes their covering, and unless they were sowed very thick, especially in stiff soil, they would not be able to burst it, but by the united strength of several they are enabled to overcome the difficulty and it is much better and easier to thin than replant. In a few days after the plant makes its appearance, it ought to be wed, by hauling the dirt from the cotton towards the water furrow; then run a furrow upon each side of the cotton, and as near as you can without disturbing the roots, with the mould board next the water furrow; this places the plant on a ridge, if not on one already and leaves an opening upon each side of it, through which the rays of the sun can more readily warm its roots. At the next weeding, which will be necessary in ten or twelve days, the hands may begin to thin by chopping out the cotton with their hoes; this process however, must not be completed the first time, as the cold weather in the month of April and forepart of May will kill a great many of the plants; in fact the final thinning should not be finished until the middle or last of May, or until all danger from cold nights has ceased. The plant grows very slowly until after the summer solstice. In land that will produce from 3 to 500 weight of seed cotton to the acre, the plants should stand from 4 to 6 inches apart in the ridges; and the ridges from 3 to 4 feet from centre to centre. Upon land that will produce from 6 to 1200 weight to the acre, the plants ought to stand from 8 to 24 inches apart, and the ridges from 5 to 7 feet apart. In the cultivation of cotton, the soil, after the breaking up, should be ploughed shallow; as this crop is longer than any other before it begins to shade the ground, deep ploughing tends to exhaust the fertility of the soil, by a continual turning it over to the rays of the sun. Again, cotton has a tap root, and does not require that deep tith between the ridges that Indian corn or any other plant does which has fibrous roots. About the month of August, it sends off from the main root a few lateral ones; but owing to the first

deep ploughing, these find the soil sufficiently porous to make their way.

Cotton requires working later than any other fallow crop with which I am acquainted; it must be kept entirely clear of grass and weeds; the two last workings will have to be done entirely with the hoe, as the limbs have by that time extended to some distance the horse and plough would lacerate and injure them. About the 25th of August the main stalk must be topt, and this is quickly done; a hand can top from 5 to 7 acres a day. By stopping the growth of the main stalk, the whole quantum of vegetation is thrown into the limbs, which causes the bolls to grow larger and arrive much sooner to maturity.

Cotton ripens soonest in a sandy loam, but the staple is the longest in a clayey loam, in whatever soil it is planted, it is all important that it should be laid dry. The past summer has been very wet, and very detrimental to our cotton crops; the plant grew unusually large, but the wet caused the bolls to drop from the limbs while young, and those that remained are quite small.

Cotton begins to blossom here about the first of July; the pods begin to ripen and open about the last of August, and continue ripening and opening until frost puts a stop to all further growth. My practice is not to begin to pick the wool from the pods until they have all opened. I then go over the crop twice, the first time to gather all that the frost has not stained, which is perfectly white; the next time the stained is gathered, and each packed after ginning, into separate bags. A good deal of the yellow that you leave at the first picking, is by exposure in the fields perfectly bleached.

A cotton gin, house screw, and the necessary apparatus for cleaning and baling of cotton, will cost from \$400 to a \$1000.

From what little I have seen of the rot in cotton, I am unable to form a satisfactory opinion as to its probable cause. In a crop this year of about 200 acres, I have sustained very little injury by it, and this is the first year, so far as my information extends, of its appearance in this state. Neither was I much troubled by the worm, which I believe has now also for the first time infested our cotton, by eating into the pod when about half grown, which utterly ruined it. Our summer has been universally wet and warm, which, we all know, is that state of the atmosphere most favourable to the generating of insects.

To this in a great measure, do I attribute the large quantity of worms, that have appeared this season. They are of the same genus and species as those which make their way into the ears of Indian corn at the tassel end, while in its milky state; I planted this year about four acres of Indian corn, and cotton together; the corn was planted in the same ridge with the cotton, one stalk in a place and six feet apart, the ridges or beds being 5 1-2 feet apart. I saw no difference in the growth of this cotton; and the corn, so far as I could discover, was equally as good as that where no cotton had been planted. But in these four acres, *not a worm had presumed to puncture a single pod, there were several in the ears of corn*: and I saw on this compartment, but a single pod that had the rot. Corn planted with cotton, and at the same

time arrives to that state in which the worm has the greatest fondness for it, sometime before the cotton forms its bolls; a half grown cotton boll, at or about which time the worm attacks it, is full of juice containing considerable saccharine matter; so is corn in the milky state, and this it is which attracts the worm. And as the corn soonest perfects this food for the worms, I suspect from this year's observation that, it protects the cotton from their ravages; for after they enter an ear of corn they will not leave it to feast upon another plant. Again, the worms destroy but a small part of an ear of corn, while it totally ruins a pod of cotton. If corn injures cotton where planted with it, the small trial that I have made and described, does not prove it. I should be unwilling, however, to risk a whole crop upon it in that way, but I intend to plant the next years fifty acres in that manner, and to observe it minutely in every stage of its growth, and its effects upon the worm, and the rot. If the rot in cotton is occasioned, as is generally supposed, by an insect, why will not some other vegetable, when planted with it, in a mode that will not injure its growth, protect it from this insect, as securely as wheat will the turnip from the fly or flea?

I applied plaster last year and this, to the half of a field of cotton, containing about 20 acres; the last year was extremely dry, but the plastered cotton imbibed sufficient moisture from the atmosphere to keep it of a dark green colour, while that without plaster was very yellow and grew slowly; yet I could discover no difference in the product. That without plaster, yielded as much cotton wool to the acre, as that with it. The same observation has held good this year, except as to colour; the wet kept all the plants green until frost, no visible difference in their product; this warrants me in an opinion I have long entertained, that plaster as a manure adds to the growth and size of the plant, but nothing to its fruit or seed.

I doubt very much whether clover, upon which it is said to have such a wonderful effect, produces any more seed to the acre by being plastered. I have tried other manures, and especially cottonseed deprived of its vegetating principle, and they have not only increased the size of the stalk, but the pods containing the wool.

If you should think the foregoing worthy a place in the "American Farmer," I may take the liberty of sending you something more when I have both leisure and opportunity.

A PLANTER,

of Johnston County, N. C.

JOHN S. SKINNER, Esq.

November 16th, 1820.

COMMUNICATED FOR THE AMERICAN FARMER, BY
G. W. JEFFREYS.

Virginia, August 12th 1818.

DEAR SIR,—I have delayed answering yours of April last, that I might enclose you a little of the Isbell Wheat. There are two varieties of this species bearded and unbearded. That enclosed is of the bearded. Having cultivated both for many years, I have preferred the bearded for very slight reasons. Of the other species, should I be able to procure any, I will also enclose you some. The characters of both are—1st. Great forwardness.—2nd. A liability once in 20 years to be injured,

but not destroyed by frost.—3rd. To produce every year a few black rotted heads, which do not injure the other wheat or materially effect the crop. 4th. To be far less liable to rust than any latter species.—5th. It requires strong land and produces on poor, worse crops than late wheats.—6th. It is hard wheat to get out.—7th. It makes very fine flour.—8th. It is one fourth lower than late wheats.—9th. Its heads look short, but have nearly or quite as many grains as late wheats. I have for many years partly cultivated it. The high repute it once had, has diminished as our lands have grown poorer. This wheat and two species, called red chaff and purple straw, have been selected as rivals in this quarter. If the two latter are new to you, I can send you some seed of each in the mode I do this. Confined to one kind only. I would prefer the red chaff, but the results of experiments are often contradictory, as they depend upon the seasons in a great degree.

To preserve a variety of wheat pure, or select a new one for experiment, I gather head by head the kind required into a basket, sometimes to the extent of two bushels. By sowing this apart, and raising seed from it, and repeating the selection annually, regeneration keeps pace with decay, and any variety may be preserved in a state of great purity. The time of ripening the contents of the ear, the health and strength of the straw, and the abundance of branches, are objects kept in view in selecting new kinds of wheat.

To preserve the pumpkins against the bug, I ridge the land in 5 1-2 feet ridges early in April or the last of March, having furrows between as deep and as wide as possible. Immediately before planting them, ridges are completely cleaned and reversed. If this does not destroy the insect, as sometimes happens, it seldom fails to diminish the number considerably, and those which appear are killed with the hand at no great trouble. Indeed, I have saved ten acres, having every plant infested, at no great expense, except that of attention. By leaving 5 or 6 plants in a place to be thinned to one, the injury is diminished by being divided. The thinning should never take place until the danger from the bug is past. In one trial I have made between the smallest and the largest pumpkin seed I ever saw, the former was infinitely the most productive.

None of the machines for gathering clover seed I have seen, will answer, when the clover falls.—Sometimes I gather it with old women, who pass from bunch to bunch as it lies irregularly, select the richest in seed, and rub it off into a small tray, to be emptied when full into a bag. Thus, unlooked after, the task is eight bushels in the pug a day per hand. At others, I cut the clover wet, and rake it into streets, convey it when dry to a threshing floor, and thresh it. I sow all I use in the pug. This latter mode is I think described in Arator.

I have not, I believe, overlooked any of your questions. If the answers should require any explanation, it shall be cheerfully given to the best of my power.

I congratulate you on the cheering prospects in relation to the navigation of your river. It will depend on yourselves, however to realize them. Navigation will not raise and sustain towns and cities. A good system of agriculture is the true mother of population, and population only can raise these evidences of national prosperity. They will

even decrease as land is impoverished, though the population should increase. Within sight of me is a town, on better navigation than the Roanoke can be made to yield, not possessed of one fourth of the trade or wealth it had forty years ago. Below it are others in a similar state of decay, and one with 15 good stores within my memory, totally gone to decay. As no new conflicting town has appeared upon a great navigable river within the period, these afflicting effects can only be ascribed to the impoverishment of adjacent lands. That the inhabitants of the spacious and fertile country watered by the Roanoke, may not experience a similar calamity, is the hearty wish of,

Yours respectfully,

JOHN TAYLOR.

G. W. JEFFREYS, Esq.

LUCERN.

From Dickson's Farmer's Companion.

This is another plant of the artificial grass kind, that may in some cases be cultivated with much profit and advantage, as affording a large produce of succulent green food, for the support of different sorts of stock, and likewise of hay for the winter fodder of horses or other cattle.

The soils most suitable to the culture of this plant are all those of the more deep, rich, and drier kinds, as those of the sound, mellow, loamy, gravelly and sandy descriptions; but on such as are retentive of moisture it should not be attempted, as the roots are liable to be greatly injured, if not wholly destroyed, by the stagnation of water about them. Weeping gravelly lands, and all such as are not well drained, are of course improper for this sort of culture. It is supposed by some, that for the successful cultivation of this sort of crop, it is necessary that there should be a substratum of such a sort as is capable of stopping the descent of the roots at a certain depth, in order to prevent their exhausting themselves; but the depth of the mould, in this case, should be considerably greater than for that of the preceding grass, a foot and a half to two feet being mostly required.

In the preparation of the land the soil should always be brought into as fine a condition of mould as possible. This may be effected by repeated ploughing and harrowing, and the previous growth of such crops of the green kind as have a tendency to clean and render the land more fine and mellow. In this intention, some advise the taking of two crops of turnips, carrots, or cabbages, either in succession or alternating with each other; the turnips, in the heavier loams, being eaten off upon the land in the second autumn, before it is ploughed up. In either of these cases, from the hoeing and constant culture which is necessary, while the crops are upon the land, it will be left in a suitable state of cleanliness and friability. Others recommend following as a better practice, the roots of weeds, of every kind, being carefully picked out in the different ploughings and harrowings. From the great length of time, that the ground must remain unemployed in this mode of preparation, it is probably, however, only capable of being practised with advantage where the

lands are heavy and very full of weeds. Before the seed is put in, the soil must be rendered perfectly fine by ploughing it over as frequently as may be necessary, and breaking it well down by occasionally harrowing. It will seldom be necessary to make use of manure; but where the land is found to stand in need of it, application is best made with the first of the green crops. The object to be constantly kept in view in this business is chiefly that of rendering the land perfectly clean from weeds, and at the same time highly mellow and friable.

Seed.—The seed of lucern is larger and of a more pale colour than that of clover; and as much of it is brought annually from Holland, it is commonly purchased in the seed shops, the price varying from one to two shillings a pound. As seedsmen are apt to keep their seeds from year to year, it may be necessary to observe, that that which is perfectly fresh, is the most proper for being sown, as small seeds in general vegetate in the most perfect manner when new. The proportion of seed that is necessary is variable, according to the nature of the land and the manner in which the crop is cultivated. In the broadcast method, which has been found very successful from eighteen to twenty pounds may be proper, while in that of the drill it will be considerably less, according to the distances at which the operation is performed. In two feet equidistant rows the usual allowance is about six pounds; in those of eighteen inches, about eight pounds; in those of twelve inches, ten or twelve pounds; and in nine inch rows, which are by much the best, from twelve to sixteen pounds may be necessary.

Time and method of sowing.—The most proper season for putting this sort of crop into the ground is as early as can be done in the spring months, as in this way plants may be fully established before the season becomes too hot.—The latter end of March for the more southern districts may be the most proper period, and the beginning of the following month for those of the north. When sown late there is more danger of the plants being destroyed by the fly, as has been observed by Mr. Tull. If the plants be intended to be transplanted out into the garden method, it will also be the best practice to sow the seed-bed as early in the spring as the frosts will admit, in order that they may be strong and fit to set out about August.

With regard to the mode of putting in the crop, it should vary with the circumstances of the soil, and the mode of after-management that can be adopted with the most convenience. Where much attention cannot be bestowed in the business of hoeing and keeping the crop clean, the best method is that of sowing the land broadcast: though in this method the crop may not last so long in the ground. But in cases where the crops are capable of being kept in a sufficiently clean condition by repeated hoe culture, the drill may be more advisable, especially at narrow distances. Some, however, think it the best method in all cases.

The practice of transplanting can, perhaps, only be done in particular cases, on small pieces of deep land that are in great heart and require the plants in consequence to stand thin and re-

gular upon the ground, as in this mode they become large and of vigorous growth. In soils that are inclined to moisture at some depth below the surface, it may be a useful method of keeping the roots of the plants from being injured by their penetrating too deeply, as is more the case when the plants rise from seed.

The seed may be sown either alone or with grain crops, in the same manner as clover; each method has its advocates, and it is probable that they may both be useful under different circumstances, as in the deeper and more fertile sorts of lands the first may be the most beneficial method, and in those of the lighter and less deep kinds the latter—as in the deep, rich sorts of land there may be less loss of time in procuring the green produce for the use of horses or other sorts of stock, as well as the greater certainty of the crop succeeding. But in the lighter and more porous soils, by being sown with grain, the plants may be better protected in their early growth, as well by the shade as the moisture that will in that way be preserved. Some indeed speak of its superior utility, on the ground of long experience, in its being better preserved from the fly. Wherever this mode is made use of, the grain should, however, be sown thinner than is usually the case in proportion as the soils are more rich. Oats are preferable to barley for the purpose, as being less liable to lodge, especially when sown thin. From five or six pecks, to three bushels, sown as evenly as possible, may be the best proportions, the smallest quantity being necessary on the richest soils. After the grain has been sown and harrowed properly in, the lucern seed should be immediately sown by a regular even cast over the fine surface, covering it in with a light seed harrow; but it should not be too deeply covered in; two inches is fully sufficient. In the drill method the same system should be followed, the lucern seed being drilled in, either lengthways or across, at suitable distances, immediately after the corn has been put in.

In regard to the proper distance of the rows where the drill mode of culture is practised, it should probably depend upon the state and circumstances of the soils; some advise two feet as the best distance in all cases, while others think equal distances of a foot in rich soils such as are worth from 30 to 40 shillings the acre rent, and nine inches those that are of inferior fertility, as from fifteen to twenty shillings the acre, the best general distances. On soils of less value, it is probable that this culture can seldom be had recourse to with much benefit to the farmer. The last distance approaches much to the broadcast method, which is contended by some as the most appropriate in all cases; of course it may be preferable, as it admits of being ploughed between by a suitable plough in the room of the harrow.

The seed, in whatever method it may have been sown, is, when good, rather rapid in its vegetation, beginning to sprout in the course of a week, and soon spreading itself over the surface of the land. And the sooner it attains its rough leaf the better, as it is then like turnips, out of danger of being destroyed by the fly.—Before these plants arrive at this state of growth, they are liable, especially in dry sea-

sons, to be much injured, if not wholly consumed, by the ravages of the same sort of insect as that which is so detrimental to the turnip plant. Where the greatest parts of the plants are injured in this way, it is probably the best method, when the crop has been put in alone, to plough up the land, and sow it down again with fresh seed as soon as possible. This is an advantage which the practice of sowing the crop alone has over that of putting it in with those of other kinds.

(To be continued in our next.)

MILLET.

Copy of a letter from Dr. Coleman of Shottsylvania County, to a gentleman in Fredericksburg.

I herewith send you a bushel of millet for seed, which you may present to the "Fredericksburg Agricultural Society," or dispose of in such manner as you think proper.

I am engaged in a pretty extensive course of experiments to ascertain the comparative value of this grain, the results of which I shall hereafter make public. In the mean time, for your information, I will state a few facts with regard to it.

One acre and a half of very indifferent land, such as could not produce, as a maximum crop, more than fifteen bushels of corn per acre, yielded of millet the present year, thirty one and a half bushels—twenty-one bushels per acre. The excessive drought which diminished my corn crop, nearly half, appeared to have no injurious effect on the millet. The conclusions, I think, may fairly be drawn, that millet, *ceteris paribus*, is much more productive than corn, and no wise liable to injury from the drought of our summer months. Perhaps, my opinion is premature.

The weight of millet is fifty-five and a half pounds per bushel, and by the best possible test, viz. the scales, I find that of the husk or outer covering to be thirteen and a half per centum—leaving a net of forty-eight pounds to the bushel nearly.

To ascertain its nutritious qualities, I took two pigs of equal weight, (viz. one hundred and ten pounds) and put them in separate enclosures, and fed the one on boiled millet and millet meal, and the other on corn prepared in the same manner. In fifteen days I killed them. The net weight of that fed on millet was one hundred and two pounds, and that of the other eighty-six pounds. Thus the usual deductions being made, the first gained twenty-eight and two-thirds pounds, and the other twelve and two-thirds pounds in fifteen days. An ox taken from the yoke and fed five weeks on equal parts of corn meal and millet meal, when slaughtered a few days since, was prime beef, weighing five hundred and sixty-five pounds net.

For stock of any kind, I am prepared to say, that millet is as good or better than any grain of which we are in possession. It should be planted early in April, in rows four feet distant, and one foot or fifteen inches apart in the drill. It requires about as much work as corn. The meal of millet is an excellent substitute for chocolate, and I send you a small parcel for

trial. Boil two or three spoonfuls in three pints of water, add thereto one pint or somewhat less of milk, and a piece of butter, the size of a nutmeg; decant and sweeten to suit the palate. I think it the best substitute with which I am acquainted, "prepared rye" not excepted.

I hope some of your agricultural friends will be disposed to cultivate a little millet next year, should that be the case will you request them to inform me by letter of their success. I am anxious that a fair trial should be made with it in different soils. I am sanguine in the belief, that it will be no unimportant desideratum in rural and domestic economy.

TO THE EDITOR OF THE AMERICAN FARMER.

Williamsburg, (S. C.) Jan. 1st. 1821.

REMARKS ON THE CULTURE OF RUTA BAGA.

By a member of the Williamsburgh Agricultural Society, South Carolina.

MR. SKINNER,

SIR—In No. 38 of your very much admired and valuable paper on agriculture, you have published the experiments of three members of the Albemarle Agricultural Society (embodied by one of them for publication) on the culture of Ruta Baga and Mangel Wurtzel, the former of which he has condemned to infamy and disgrace, while he gives the highest commendations to the latter. From the great character given the Ruta Baga by Mr. Cobbett and others, I too have been induced to make a small experiment on it, and also on the Mangel Wurtzel, the result of which I beg permission to communicate.

I shall confine my remarks principally to the culture of the ruta бага, fearing from the very unfavourable account given of it, by the Albemarle Farmer, others may be deterred from cultivating or even making an experiment on the culture of that very valuable article of sustenance. My experiment was made on a piece of flat, pine, barren land, of a fine sandy soil, very poor, and its natural state could not produce more than from six to eight bushels of Indian corn per acre. I cut off the timber and penned about one hundred head of cattle on it, (one acre) from the first week in the month of May, till the last week in June. I then had the roots grubbed out, and ploughed it up with a common cutter plough. I then cross ploughed it with the same plough, to the depth of about four inches; then with the same instrument, threw four furrows together four feet apart from centre to centre, and dressed them over with a hoe, which formed a flat bed, between two and three feet wide on the top, I then trenched the beds thus formed cross ways, with a rake made of a piece of wood two feet long, having 3 teeth, one in the centre, and one at each end, making three trenches at a time, one foot apart; and planted my seed the first day of July, which I think too late. My ruta бага had a bad chance to succeed well, the season was too wet; the earth was perfectly saturated with water for weeks, nay, I may say months, after the seed was planted, it came up badly and did not grow till late in September,

when the weather became a little drier. On the third Saturday in November, I pulled up two roots promiscuously, one of which weighed five pounds and three fourths, the other six pounds and three fourths, after the tops were cut off, at which time (the weather being warm) they were in a fine growing state. From this result I am clearly of opinion, that there is no situation between Long Island and Charleston, that is not congenial to the growth of ruta бага, provided the soil is suitable. I can discover no good reason why it should not grow at any intermediate situation, when it is proven that it will grow well here and in New York. Although my turnips are not very large, the experiment is entirely satisfactory to me, and I am sure the ruta бага, under favourable circumstances, will grow as well here, as at "Botley" or "Long Island."

I hope the Albemarle farmers will not be discouraged. I think they will find by perseverance, that instead of a "nice little bit of a turnip," they will have a fine, large, delightful turnip. They are the most delicious table turnip I ever tasted, and valuable for feeding cattle, hogs, and poultry, and some horses will eat them.

I planted also a little mangel wurtzel, it failed entirely. I do not however, attribute the failure to either climate or soil, but to an uncommonly unfriendly season, and late planting. I shall not be disheartened at this, but try again. I have no doubt of succeeding.

I am, dear sir,
Your obedient servant.

FROM THE PLOUGH BOY.

BURDEN'S PLOUGH.

Butternuts, Nov. 13, 1820.

DEAR SIR—I received your letter of the first Sept. on the 4th ult. with the BURDEN PLOUGH, and feel myself under obligation to you for your kind attention. As far as I have yet tried this plough, I have every reason to be well pleased with it; the work it makes is neat and superior to that of Wood's, and requires much less strength of team.

My son Lewis Lee was engaged in breaking up a piece of land, mixed soil, principally gravel, with one of Wood's ploughs, drawn by a yoke of oxen and a pair of horses; I took my Burden plough down, and with the oxen alone, it made more expeditious and better work than his did with the strength of the whole team. In fact his people were so fond of my plough, that they returned it with reluctance.

The venders of other ploughs are very jealous of this, and try to raise prejudices against it.—But Mr. Burden will, I have no doubt, succeed, and his plough will be considered an acquisition to our country. I should be very unwilling to be without the one you were so obliging as to send me.

With great esteem, I am,
Sir,

Your friend and servant,
JACOB MORRIS.
HENRY F. COX. Esq.

TO CURE A BURN.

I give you a remedy for a burn, said to work miracles. As much powdered chalk as will to any quantity of hogs lard, make an ointment of tolerable consistency, with a piece of lead, mix well and thoroughly upon a pewter plate, anoint the burn frequently.

F.

TO MEND GLASS.

Dissolve clear gum arabic in spirits of wine, or strong brandy, then, after having heated the broken pieces, anoint the edges with the mixture and join them, press them together and hold them so until they become nearly cold.

TO MEND CHINA.

Beat up the white of fresh eggs, and add to it as much fine quick lime, as will give it a tolerable consistence, which apply to the broken pieces, and join them together, when, after they are dry, boil them in milk, and the seam will not be so visible. Should they happen to come apart, in the boiling, (for want of being well joined) the operation can be performed again.

SAUSAGE MEAT.

Twelve pounds of meat, seven pounds of fat from the back of the chine, five large spoons of salt, six do. of sage, two do. of thyme, three do. of pepper.

When put into guts, put it into large pots and pour milk warm lard over them, until the pots are full.

TO PICKLE OYSTERS.

Put the oysters on the fire and let them simmer until the gills begin to shrivel, then take them up and wipe them carefully in a towel—strain the liquor and put on to boil, with a little salt, whole pepper, and mace; when well boiled, to a quart of liquor, add one half pint of Madeira wine, and the same quantity of white wine vinegar; the liquor must be nearly cold before it is poured on the oysters.

THE FARMER.

BALTIMORE, FRIDAY, FEBRUARY 16, 1821.

The Editor will thank his subscribers, who have BROKEN sets of the FIRST VOLUME, and who do not propose to bind them, if they will send him by mail No. 28. That number would enable him to make up several additional volumes, and would therefore be worth \$4 to him; whereas they are worth very little to the owner of a broken, unbound volume.

PRICES CURRENT.

Baltimore, 16th Feb. 1821.

Flour from wagons, \$3 75 per barrel—Whiskey, do. 25 to 28 cents per gallon—Hay, \$16 per ton—Straw, \$9 per ton—N. Carolina Cotton, 15 to 17 cents per lb. No recent sales of Tobacco, or cargoes of grain have been made; but as our harbour is now nearly free from ice, we shall soon have it in our power to extend our quotations of prices.

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